

LM386

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6.3 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted)

		MIN	NOM	MAX	UNIT
V _{CC}	Supply Voltage	4		12	V
	LM386N-4	5		18	V
	Speaker Impedance	4			Ω
V _I	Analog input voltage	−0.4		0.4	V
T _A	Operating free-air temperature	0		70	°C

6.4 Thermal Information

THERMAL METRIC ⁽¹⁾		LM386	LM386	LM386	UNIT
		D (SOIC)	DGK (VSSOP)	P (PDIP)	
		8	8	8	
R _{θJA}	Junction-to-ambient thermal resistance	115.7	169.3	53.4	°C/W
R _{θJC(top)}	Junction-to-case (top) thermal resistance	59.7	73.1	42.1	°C/W
R _{θJB}	Junction-to-board thermal resistance	56.2	100.2	30.6	°C/W
Ψ _{JT}	Junction-to-top characterization parameter	12.4	9.2	19.0	°C/W
Ψ _{JB}	Junction-to-board characterization parameter	55.6	99.1	50.5	°C/W

(1) For more information about traditional and new thermal metrics, see the [Semiconductor and IC Package Thermal Metrics](#) application report.

6.5 Electrical Characteristics

over operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
V _S	Operating Supply Voltage	LM386N-1, -3, LM386M-1, LM386MM-1	4		12	V
		LM386N-4	5		18	
I _Q	Quiescent Current	V _S = 6 V, V _{IN} = 0		4	8	mA
P _{OUT}	Output Power	V _S = 6 V, R _L = 8 Ω, THD = 10% (LM386N-1, LM386M-1, LM386MM-1)	250	325		mW
		V _S = 9 V, R _L = 8 Ω, THD = 10% (LM386N-3)	500	700		
		V _S = 16 V, R _L = 32 Ω, THD = 10% (LM386N-4)	700	100		
A _V	Voltage Gain	V _S = 6 V, f = 1 kHz		26		dB
		10 μF from Pin 1 to 8		46		
BW	Bandwidth	V _S = 6 V, Pins 1 and 8 Open		300		kHz
THD	Total Harmonic Distortion	V _S = 6 V, R _L = 8 Ω, P _{OUT} = 125 mW f = 1 kHz, Pins 1 and 8 Open		0.2%		
PSRR	Power Supply Rejection Ratio	V _S = 6 V, f = 1 kHz, CBYPASS = 10 μF Pins 1 and 8 Open, Referred to Output		50		dB
R _{IN}	Input Resistance			50		kΩ
I _{BIAS}	Input Bias Current	V _S = 6 V, Pins 2 and 3 Open		250		nA